TECHNOLOGY DEPT.

TECHNOLOGY

OCTOBER 1956

Approach

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When winter comes...

Approach

Vol. 2

No. 4

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Director
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Head, Literature Department
CDR P. L. Ruehrmund, USN

Editor
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Contributing Departments:
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WINTER ..... page 3

Any good farmer's almanac will advise that October is high time to conclude preparations for the weather that is just around the calendar. Throughout this issue, in pictures, prose, even poetry, the same reminder is made, to pilots and ground personnel, that much can be done now to insure uninterrupted flight operations. Many of the brief winter weather items in this issue are passed on from aviation safety publications like SAC's *Combat Crew*, Air Force *Flying Safety*, as well as the CAA Pilot's *Weather Handbook* and *Bulletins* of the Flight Safety Foundation.

". . . NO MOVIES TONIGHT" ..... page 32

A good sea story makes about the most interesting listening or reading we know of. For example, mix the dramatic elements of a crippled P-Boat, a savage storm and an all-hands effort by the determined crew of a seaplane tender, and you have all the ingredients necessary for a salty account of how persistence pays off.

COMING NEXT MONTH

Stability is a tricky word, especially on the end of landing approach or during a takeoff. For the sweptwing set stability or the lack of it, becomes a major factor which must be understood or the pilot is in for trouble. Next month's Primer for Pilots offers some thought-generating ideas on the subject. Watch for it.

This periodical contains the most accurate information currently available on the subject of aviation accident prevention. Contents should not be construed as regulations, orders or directives unless so stated. Material extracted from Aircraft Accident Reports, OpNav Form 3750–1 and Anymouse (anonymous) Reports may not be construed as incriminating under Art. 31, UCMJ. Names used in accident stories are fictitious unless stated otherwise. Photo Credit: Official Navy or as credited. Original articles may be reprinted with permission. Contributions are welcome as are comments and criticisms. Address correspondence to Director, U. S. Naval Aviation Safety Center, NAS Norfolk 11, Va.

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Letters to the Editor

Sir:

Please forward 5 copies of the chart (Crosswind Headwind Component) referred to in July *Approach*, attn: Air Officer . . . If suitable, charts will be used in determining the headwind component when catapulting out of the wind.

JOHN B. HOWLAND
CO (Acting)
USS *Franklin D. Roosevelt*

Sharp idea!—Ed.

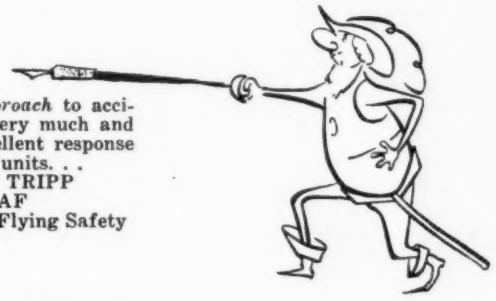
Sir:

. . . possibly the attached photograph might be of interest to you. VR-6 has an outstanding record with MATS and ranks second in the number of

Brigadier General George B. Dany, USAF Commander McGuire Air Force Base, and Captain Robert M. Milner, United States Navy Commander VR-6, admire an Atlantic Division (MATS) Flying Safety plaque which was presented to VR-6 for operating without an aircraft accident from 7 Sept 53 through 31 Dec 55. During this period VR-6 flew 58,000 accident-free hours.

accident-free flying hours compiled by units in the Atlantic Division of MATS . . . We have enjoyed your *Approach* to accident prevention very much and are receiving excellent response from subordinate units. . .

HOMER A. TRIPP
Captain, USAF
Asst. Chief, Flying Safety



Sir:

In your August issue there appeared pictures showing the use of foam on the runway to minimize damage in wheels-up landings. It is noted that the AD is shown as coming to rest on the pavement not covered by foam . . . Is the foam best employed to prepare a landing strip or reserved for possible fire, when only one MB1 crash truck is available? . . . It is suggested that all activities be advised to recharge their MB1 foam tanks after laying the strip on the runway and before the aircraft lands. . . .

J. W. DAVISON, Captain,
USN, Chief of Staff,
U.S. Naval Forces, Germany
APO 403, New York, N.Y.

Solid suggestion, Captain.—Ed.

Sir:

Read your article "Assume the Angle," August *Approach*, with great interest . . . but feel you have a tendency towards "oversimplification" . . .

For example, the subject of turning performance is a very complex subject (whereas) in your article you imply that C_L Max is the only criteria . . .One other point, I believe the major airspeed system error is still to be found in the static source . . . End of tirade. Keep up the good work.

G. B. DOYLE
Lt.Col. USMC
O & R DEPT, Cherry Point

Many thanks, Colonel, we wish that others as highly qualified (ex-TPT Ass't. Director) as you would fire us a few comments—we figure that brickbats are a basic requirement for building a better publication.—Ed.

Sir:

Your October (1955 Winter Issue) showed brooms being used to sweep snow off wing and tail surfaces. This works fine for dry snow but is a rather futile tool for use on wet snow. A rubber-edged squeegee seems to be the best for wet snow. The type found in any galley will work far better than a broom but the best type I have seen was about 18 inches wide with a metal backbone. This will make short work of wet, heavy snow that a broom will hardly touch and it will not damage the aircraft if used with a bit of discretion.

A system of snow marking that was not mentioned is to use small (3'-4') evergreens stuck upright along the edge of the runway. This system was formerly in use at NAS, Argentia and I believe that the photograph of Argentia on page 42 shows these trees. It is cheap, easily done, can't damage a plane if struck, and seems to give a bit better depth perception than flags in my limited experience with the two systems.

LT, USCG

Anybody else? Winter material contained in this issue does not, in the main, duplicate previous issues. Units having incomplete files or insufficient copies for winter safety meetings, can request copies of the 1954 and 1955 winter issues, which are now available in limited quantity.—Ed.

Letters to the Editor

Continued

Sir:

The enclosed photo was taken during a recent tour aboard NAS Columbus, Ohio. The young ladies were part of a group attending the 1956 Grand

Session of the International Order of Job's Daughters.

After seeing the print, it was considered that the five pretty faces peering through a tailpipe might have some application from a safety standpoint.

G. F. RODGERS, CDR USNR-R
Command Liaison Officer

It's a bitter brownbagger, indeed, who wouldn't overtemp pleasantly on beholding this attractive bevy of pipedreams . . . PIOs and photographers, amateur or otherwise,are invited to send photos to Approach which will promote aviation safety.—Ed.

Sir:

In the June *Approach*, page 19, there is a letter concerning the computation of the 25 minutes of fuel reserve for jets. The reply (fuel computed at cruise altitude) is correct, but I would like to add the following information . . .

The fuel reserve for an IFR flight plan is the 25 minutes of fuel required when over the *alternate*, not the destination . . .

The quotes from the new all weather manual were interesting to me as I remember that members of the FAWTUPac, Det. A, Standardization Board had quite a discussion on the very same problem of computing the fuel reserve. Since chapter 12 of the new manual is based on "jet cross-country planning" published by FAWTUPac, I feel very familiar with the subject for I wrote the booklet when serving as flight officer and a member of the standardization board.

JOHN RALSTON, Jr., Lt., USN, Senior Naval Officer
USAF 3550th Combat Crew Training Wing (interceptor), Moody AFB, Valdosta, Ga.

Sir:

Enclosed with this letter please find an article from the May issue FLYING magazine . . . for your consideration.

CARL A. CARLSON
NavCad USNR

Carl's clipping dealt with a hairy armament doors incident experienced by Brigadier General Robert L. Scott, Jr. in a T-Bird. Though space doesn't permit reprinting of famous author Scott's "I Learned About Flying From That," TV drivers will do well to check the doors on preflight, and memorize the handbook speeds and procedures in case said doors do pop open on takeoff.—Ed.

Sir:

. . . . . On the squadron level, the AAR system is all awry . . . . seems to be the preparation of tons of paper, hours of reproduction, myriad of arguments over ground rule interpretations, finally 23 copies most of which come to rest in some "info addee's" dusty files.

. . . (I propose we) use the standard printed AAR form, slip it into a typewriter with two carbon copies, send the original via the chain-of-command (without file copies for them), send a copy direct to NASC and a copy for squadron files.
files.

Perhaps this is too radical but I believe it has merit . . . I urge you to print this small howl in the wilderness of paper work.

Major, USMC
Operations Officer, VMF

Your letter was mailed just before OpNav Instruction 3750.6B became effective, and we hope that the .6B version has helped you somewhat in the ground rules department. More info will be forthcoming on Six Bravo. One reason for revising .6A was to clear up some of the spots that occasioned "myriads of arguments."

The stencil for the new reporting form is mimeograph paper length. It's just as easy for a yeoman to cut a series of stencils as to type up any other paperwork. The 23 copies is but a few more turns of the crank.

Many AARs arrive at NASC with opinions expressed by the endorsers which differ from those the Accident Board put into the original AAR. And, if the higher-ups in the chain-of-command spot an error, naturally said higher-up wants a copy of the AAR to file with his contradicting opinion.

If you think that the amount of material in the original AAR was excessive, here's the answer —each accident is coded and the info placed on IBM cards to make it readily usable in analysis and research. Naturally, an IBM won't give back a thing that you don't put into it in the first place. Also the forwarding of copies to BuAer and manufacturers allows corrective action to be initiated without delay. The general publicity assists in fleet accident prevention.

Compared to the potential good and the opportunity to prevent other tragic and expensive accidents, it seems that AAR work is really minimal, even if lack of facilities sometimes makes it a rugged chore.

Too much time spent making out AARs might indicate that your outfit is not demanding professional aviation.—Ed.

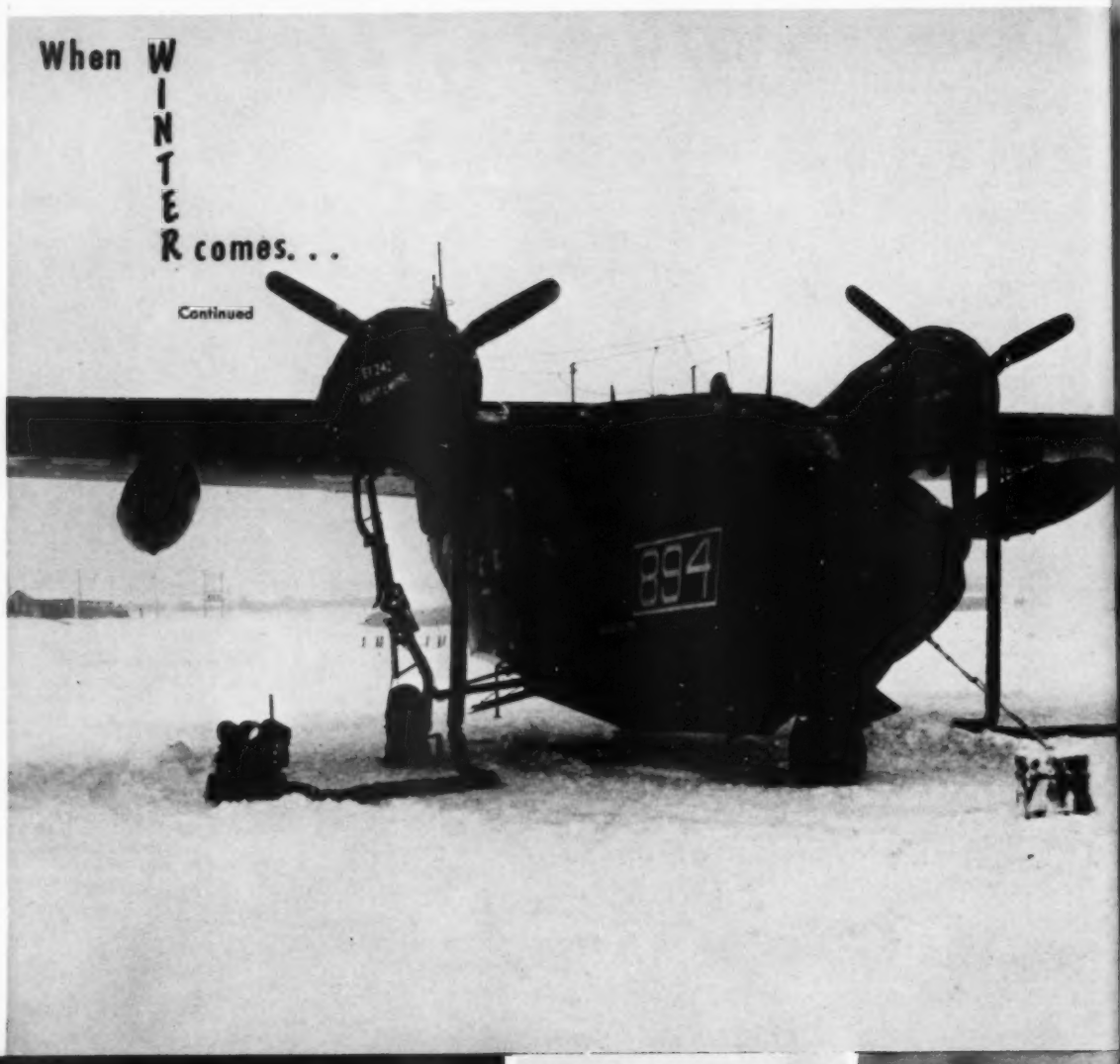
Letters may be forwarded either via official channels or direct on Anymouse forms. All letters should be signed, names are withheld on request. Address Approach Editor, U. S. Naval Aviation Safety Center, NAS Norfolk 11, Virginia.

When WINTER comes.....

Spring *can* be far behind for those who neglect to prepare in advance to continue flight operations despite the numerous frosty problems which appear. . . .

When WINTER comes. . .

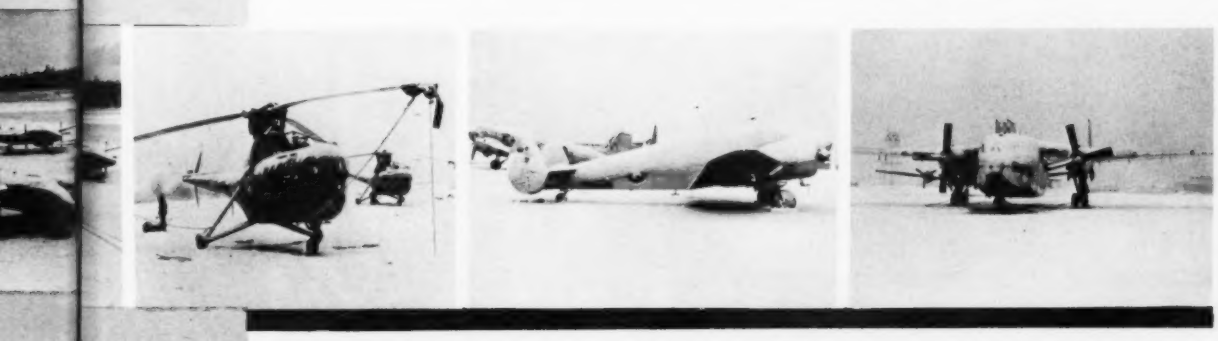
Continued



Winter plays no favorites, but distributes drifts and discomfort impartially with respect to people, planes and places. . . .

For all its beauty value, it's no small task for an air station to remove enough of its snow blanket to permit resumption or normal operations. . . .

For the pilots, there's a new element in the elements—and an extra measure of caution required in approaching the matter. . . .



When WINTER comes.

Continued

"Hey, Mac, where's your safety line?"

GT 24?

RIGHT ENGINE

After the squall is over—there begins a flurry of snow removal effort which ceases only when operations may continue with safe efficiency. . . .

Snow motion—created by rotary plow, arcs a small blizzard in the first step towards reclaiming the use of a runway.

Planning Does It — Manpower plus horsepower combination, effectively applied through careful organization, provides the hottest answer to a cold problem. *Note to pilots:* An appropriate amount of readyroom digging into winter flight procedures will greatly improve the view from the cockpit.

When WINTER comes. . .

Continued

Just how does your outfit plan to get 'em out of the white stuff and into the blue? Now is the time to organize a hangar hot stove league to prevent winter flight problems from snowballing, literally, across the ramp. There's still time to get hot before it gets too cold. Check the reference list (back cover) for info applicable to your problems.

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UNITED STATE

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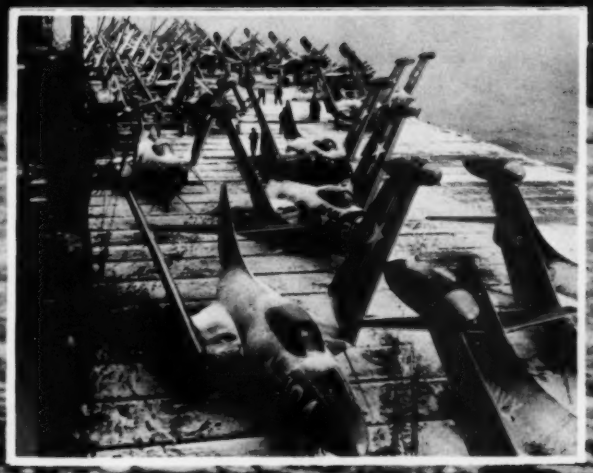
When WINTER comes. . .

Continued

At sea, from pole to pole and from CIC to CAP, cold weather problems are universal, and directly proportional to the drop in the thermometer. Equally obvious, from Flag to CAG, is the fact that a shrewdly deliberate pace of carrier air operations will best offset the limitations imposed by severe winter weather.



The concentration of activity aboard ship will require increased caution in both planning and operations. The final measure of cold weather effectiveness is the ability of the individual to adapt smoothly and efficiently to the situation dictated by Old Man Winter . . .

"THERE'll be a change in the weather and a change in the sea . . . " and before too long there'll be significant alterations in the personal equipment scene as flying folk overhaul their winter wardrobe.

This sort of preparation is necessary because certain obligations prevent naval air operations from migrating southward with the pintails and mallards. You might say it amounts to a sort of occupational exposure to a possible long walk home, and should prompt the potential walker to provide himself with such comforting items of survival gear as may be appropriate to the area.

Bear in mind, too, that the actual use of survival techniques and equipment invariably results from a "come as you are" situation which is rarely predicated in the flight plan. The successful tundra tourist doesn't overlook the other essential part of the survival equation which is proper training in the use of the gear provided.

KNEE PAD NOTES

❄ When landing on a runway covered with ice or snow or where directional control is less than usual, plan to touchdown in the *center* of the runway. Increased landing interval will permit this in formation breakups.

● **One of the gadgets subject to "bollixing" by winter weather is the altimeter. You may be tooling along at a comfortable indicated terrain clearance altitude, and actually be at mountain-peak level. For every 5-degree difference in temperature from the standard of 59° F., a one-percent error in indicated altitude occurs. Low temperatures cause the airplane to be lower, lower than the altimeter says, that is.**

❄ For jets operating in doubtful weather, more than one alternate should be considered in flight planning, with fuel as one of the primary considerations.

● **Depth perception in snow covered areas is deceptive; a runway clearly visible from above can disappear on final approach and flare due to a lack of contrast between the runway and the surrounding terrain. Glare can also distort depth perception. A GCA-monitored landing, if available, lessens this problem.**

❄ The veteran jet pilot says: "Make a really careful check of radio equipment and of all radio facilities available. It's only common sense under winter conditions."

● **Freezing rain is almost invariably associated with a shallow layer of cold air on the ground with overrunning warm air above, where temperature may be in the 40s or even 50s through a narrow layer around 3000-6000 feet.**

❄ Since rime ice usually forms on the wing leading edge, the aerodynamic efficiency of the wing is not greatly impaired. And since it is granular in makeup, you stand a better chance of its breaking off in large chunks if you have greater masses breaking loose.

● **With clear ice, more care is needed. Since it is highly tenacious, it must be broken off before it reaches a strength where the boot cannot expand. If corrective action is taken too soon, the ice will merely crack along the line between the inflated and deflated sections of the boot and will be eliminated. About one-fourth to one-half is the correct thickness to begin boot operation.**

❄ Icing on props is indicated sometimes by engine vibration and loss of airspeed due to decreased propeller efficiency.

● **Propeller icing is especially dangerous and no amount should be allowed to remain under any circumstances. Alcohol anti-icing systems will not remove ice already formed, hence all propeller deposits should be removed before starting engines.**

❄ If high relative humidity and freezing temperatures exist, anti-icing systems should be operated immediately after starting and during warmup, taxi, takeoff and in flight whenever visible moisture exists or icing is suspected.

● **The Beechcraft factory reports that cases of icing fog have been encountered which would ice up a propeller in a mile of taxiing plus ordinary warmup time.**

❄ Pitot heaters may be checked before starting by turning the heater on and feeling the tube for warmth. Heaters should not be left on for more than 30 seconds of ground operation or the element may burn out.

● **Exposure to carbon monoxide increases in winter as aircraft heaters are used more frequently. Give special maintenance attention to heaters and cockpit seals before cold weather sets in.**

Airman's

Briefs from the Wx tipsters on the

❄ **Winter, the season of fast, widespread, weather changes, strong and gusty surface winds, icing, precipitation static, poor terminal weather, adds to the problems normally encountered during every flight.**

❄ Every pilot has had a good basic training in weather. How well he has kept up or has increased his ability to "read" the weather signs reflects on his technique of flying all-weather.

❄ **Since the tropopause is much lower in winter, unfavorable weather tends to be restricted to the lower levels.**

❄ In the U.S., polar and Arctic air masses generally move toward the southeast and tropical and equatorial air masses move toward the northeast. The speed varies according to the season and the type of air mass, but it averages about 500 to 700 miles a day. The cold air masses move more rapidly than the warm.

❄ **Find out from your weather friends the limitations inherent in observing weather phenomena. Read a series of sequence reports and note the descriptive story behind the ceiling symbols. There are inherent errors in estimate (e) balloon (b) and aircraft (c) type ceiling reports. When ragged or indefinite (w) precipitation (p) and the obscured (x) type reports are given it should be noted that they are only values of vertical visibility. The weather observer has had to give up sighting on the cloud base and can only tell how far he can see into the soup overhead. Due caution must be exercised when utilizing such data, for it is in approaches under such a ceiling that you are playing for keeps.**

❄ Occasionally, unexpectedly high west winds develop at high cruising levels which sometimes dip down to the reciprocator levels at 10,000 to 12,000 feet. On westbound flights when the intensity or positions of the jet stream appears uncertain an extra fuel reserve is the only sure protection.

Like women's hats, no two winter seasons or individual storms are ever exactly alike. There are, however, patterns which may be anticipated each year with varying frequency. Familiarity with the weather patterns will put you ahead of the game in both flight plannnig and en route problems.

Pilots who fly overseas routes are guided pretty well weather-wise by BuAer's list of aerological publications. Series which cover U. S. weather are not so numerous.

So, to provide you with a brief outline of winter flying weather in the U. S. here are some gleanings from various aviation publications. You can fill in the details for your particular area by interrogating your local weather people on winter weather — before winter comes.

October is usually considered a fall month but it is a preview of winter flying hazards. In the Pacific Northwest, October is typified by fogs and low ceilings. The Seattle visibility averages between 0 and 1 mile. About one-third of the poorer visibilities occur in early morning hours and improves from noon until late afternoon.

Along the California coast the chances of heavy fog and low ceilings are greater than in any other month.

In the Central Plains, October brings a few active cold fronts, one or two active lows and a tendency toward ground fog formation during the sunrise period. The freezing levels drop down to between 10,000 - 12,000 feet.

The Central East Coast has alternating periods of stable, fog-laden air when highs become stranded off the coast in addition to general rain and low ceilings.

November — Dark rainy weather is typical throughout the Northwest. Interior areas are wet and foggy almost as much as the coastal regions. West of the Cascades this is the worst flying month due to heavy snowfall in the mountains. In the interior over the great basin area the freezing level comes down to

Almanac

...e winter calendar may bring ...

en route minimum altitudes.

In the Southwest the freezing level is down to about 8500 feet except for the southern desert sections where it is 10,000 feet.

Around the Great Lakes, instability effect is stronger as Canadian air moves across the warmer water. The entire area has frequent blankets of strato-cumulus with snow squalls.

December — Unlike the West Coast, the East Coast has a more gradual approach to the bad weather peak which comes in late December and January. Low freezing levels and lack of alternates make December and January bad, weather-wise at least.

The Northwest and Northeast bear the major burden of bad weather. The eastern storms are more likely to create widespread low ceilings and fog. Strong down-slope winds may prevail for a week or more and the east slope of the Rockies has the best December weather.

January — For flying, January is probably the worst month of the year. Storm developments reach their peak in frequency and intensity. Cold ground provides ideal conditions for fog formation and airmass contrasts between ocean and continent are at a maximum.

The weather pattern for December continues in January for the Northwest, and the east slopes of the Rockies continue to have good weather with the strong westerly downslope winds.

January is the wettest month along most of California's coast. Fog is heavier in the central valleys.

The Great Lakes and East Coast are particularly poor for flying. Warm fronts lie to the south over the Carolinas or just off the coast.

This month, along with December, has the lowest number of thunderstorms. The South Central and Gulf States have the highest winter frequency.

In the Northwestern States heavy rain and snow in December and January come from occlusions passing in from the Pacific.

❄ **Since the diurnal factor of sun heating is at a minimum from November to February, the exposure of sub-minimum conditions is almost as great during the day as it is at night during that period.**

❄ The jet stream tends to move to the southern U.S. in the winter and heads toward the east coast, south of Newfoundland. From there, it wanders up toward Iceland and then ESE to the United Kingdom. Jet streams in winter are stronger and at a lower altitude than in summer.

❄ **There is a maximum of mountain waves in winter. For example, over a range like the Sierra Nevada, waves can be expected during one out of four days with two or three strong waves per month included.**

In the western U.S. it has been noted that the strongest waves develop when there is a cold front approaching the mountains from the northwest and a trough aloft approaching from the west. This produces a strong westerly flow over the mountain ranges which have a north-south orientation.

❄ It is usually a rare day when the weatherman can assure you of good visibility under a low ceiling. Winter weather develops and breeds a special hazard of the strong inversion. Under that small quirk in the atmospheric temp-pressure curve, mother nature stuffs all the fog, stratus, smoke, dust, haze and condensation nuclei that robs all the side and back light necessary for a pilot's vision.

During winter, pilots usually fly in the serene stability of the upper levels of a polar air mass. Complacency sets his mind at ease until he lets down in the middle of the drizzle and visibility below.

❄ **Areas in the U.S. most likely to have heavy snow are the Great Lakes Region, New England and the western mountains.**

❄ PIREPS assume a greater importance during winter flight operations when icing conditions may be greater than forecast. Keep the weatherman informed of conditions.

VP

The pilot sighted the runway lights through the snow and moments later the P2V struck the ground short of the runway.

LOWER THAN YOU THINK— Shortly after midnight a P2V was on final, with 3 miles visibility in thunderstorms, snow showers and light rain showers. Wind was 25 knots, increasing, with actual visibility occasionally less than that reported.

At one mile the pilot reported the runway lights in sight. A student pilot in the left seat, who was in control and on instruments, then looked up momentarily to locate the runway.

One-half mile from the runway the P2V struck the ground in a nearly flat attitude at about 120 knots and broke up for strike damage. Miraculously, there were no injuries to the crew.

The accident board gave primary error to the pilot because he had visual contact yet permitted the plane under his command to be flown into the ground. It was considered that the student pilot lost positive control and "allowed the aircraft to continue its descent and make contact with the ground."

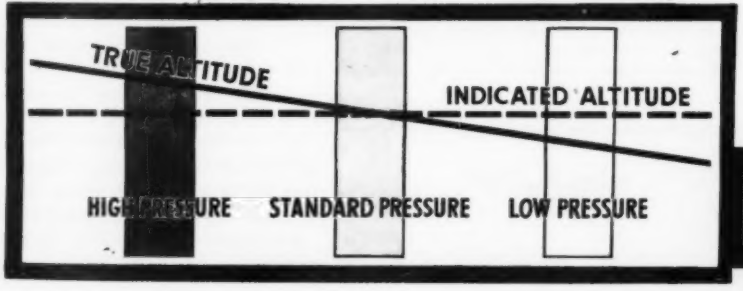
However, if the statements given by the pilots are considered, a disconcerting circumstance is introduced. The student pilot said he noticed the altimeter slowly passing through 2200 feet and in the next instant felt the impact of the ground. The pilot stated the pressure altimeters were reading 1900 feet when the plane struck.

Even allowing for cockpit conditions at night with a possible error in reading the altimeters, something doesn't ring right when considering that the field elevation was 1582 feet and the approach zone is

Truth

flat terrain. The pilot had checked his altimeter before takeoff and found no error.

The accident board noted the lack of a recent altimeter setting and stated the only one



received by the pilot was from the destination radio facility upon the initial arrival near the field an hour earlier. Lack of an initial radar target had prevented an immediate GCA as the pilot had requested.

An altimeter setting recorded at the 2325 observation was 30.03 inches. This would have been shortly after the plane arrived in the area. After the crash the altimeter on the right side of the plane, where the pilot was sitting, read 30.00 inches, the left altimeter read 30.33.

Nothing in the report accounted for the discrepancy between the two altimeters except for the possibility that each pilot misunderstood the setting because of the initial poor communications.

By midnight the setting had dropped to 29.94 and at 0028 was down to 29.91 inches. The crash occurred 19 minutes after midnight and using that setting would give a 6/100th-inch difference between the actual midnight pressure and that set on the most nearly correct P2V altimeter.

With 1/100th-inch equal to 10 feet, the smallest error would put the plane some 60 feet lower than its indicated altitude. In view of the falling barometer and assuming the pilot in control was using his altimeter (set at 30.33), an error of over 100 feet was possible.

Another circumstance makes the altimeter setting even more important.

Although the pilot had called for a GCA, the P2V was being handled as a lost aircraft and the GCA controller thought it best to set up a straight—in to the nearest runway to expedite the landing. Thus, the approach was actually a surveillance (PPI) approach. However, this fact was not clearly passed on to the pilot. Lacking glide path information, any error in altitude became more critical as the approach progressed toward the runway.

The last assigned altitude given the pilot was 1900 feet which should have put him about 300 feet above the terrain at a mile out. With anything less than an initial 300 feet, a 3-degree glide slope or rate of descent intersects the ground short of the runway.

Building this circumstantial evidence into a possible cause factor is admittedly the result of speculation. However, the important thing is that the accident could have resulted from an incorrect altimeter setting and any lessons learned are just as valid as if the accident report had pinpointed it as the cause.

Even without his pressure altimeter the pilot of the P2V might have avoided trouble if he had used his radio altimeter (AN/APN–1) correctly. It was on and operating but set on high scale.

The All Weather Flight Manual, chapter six, gives a word of caution on the limitations of the APN–1. Simply stated: any time you are operating below 500 feet over water or 600 feet over land turn the instrument to LOW scale.

If on high scale and below these altitudes, the indicator will usually read high and may fail to read below 400 feet regardless of the actual altitude.

In this case, the radio altimeter was reading a comfortable 300 feet terrain clearance right up to the time of the crash.

More on next page

and Consequences

A DIGEST OF SIGNIFICANT AIRCRAFT ACCIDENTS

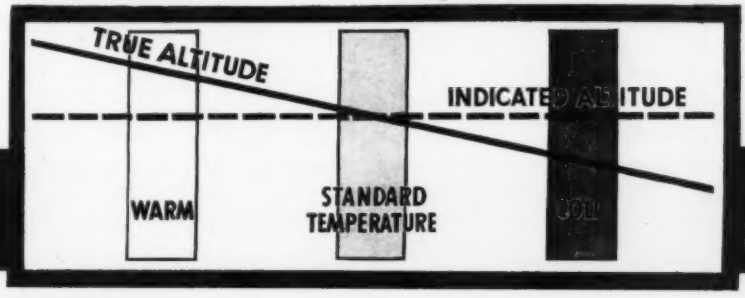
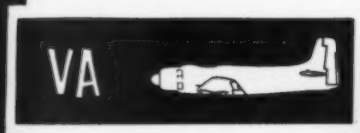


Illustration from NavAer 00-80W-7, "Flight Through Instruments."



A NOTAM made no mention of the snowbanks on the runway.

THE LAST MILE—Two severe snow storms blanketed an east coast air station and curtailed flight operations for two days and three nights. Snow removal required extra effort and funds greater than that normally needed for such winter operations.

Notams were issued at intervals and one stated, "runways —and—clear with normal braking action. Taxiways clear except for small patches slush and ice. Field open to most essential official business only . . ." Three days later a subsequent notam reported, "field open for normal operations with limited parking."

An AD–5W had been away on a special exercise for six days and was returning to the field at night. The pilot's preflight planning included a check of current notams for the destination. Upon arrival over the field he was cleared to break and the tower made no mention of any hazards on the field.

Touchdown was made slightly to the left of the runway centerline in a tail-high attitude. It appears that the plane drifted slightly to the left or was angled. As the tailwheel came down the plane hit an unlighted snowbank 60 feet inboard from the runway lights and swerved violently to the left. The nose-up cost 9000 dollars in damages.

The snowbank was from one to two feet high, five to ten feet wide, and ran the length of the runway with breaks at runway and taxiway intersections. Shortly after the accident a revised notam was issued which said, ". . . Snow windrows on sides of all runways . . ."

Though there was a 175-to 200-foot strip of cleared area the length of the runway, the board felt the accident could have been avoided if the snowbanks had been plowed outboard of the runway lights, or adequately lighted for night operations. It was noted that accident might have been prevented by a more accurate Notam, or had the control tower advised the pilot of conditions.

Here's a case where plow crew were exhausted from the long effort, and station funds depleted, *but* the extra push—the last mile for safety—would have been cheaper in the long run.

BUSTED BINGO—Arriving over an east coast air station at cruise altitude the flight leader of four FJ-2s called for a fuel check. All pilots in the flight reported 2050 pounds of fuel remaining; 50 pounds over the leader's planned minimum fuel state of 2000 pounds at the check-point.

The air station was the halfway point in an 860-mile cross-country flight with 310 miles yet to go and after checking the latest destination weather the flight leader decided to continue. The weather had held as forecast with 12,000 overcast, four miles visibility in smoke.

After electing to continue, the first of several detrimental things began to happen. Over a check-point (an Air Force base with jet facilities) 147 miles from the destination the predicted helpful winds were not helping and as a result the flight was running low on fuel. The flight leader estimated his fuel as 1100 pounds upon arrival; however, the section leader estimated he would have only 700 pounds over destination, 300 pounds short of the 1000 pounds required by squadron SOP. No member of the flight expressed apprehension or concern over fuel even though the flight was running 5 minutes longer and 400 pounds under the preflight estimate at this point.

A short time later the flight leader attempted without success to obtain a controlled en route letdown. He then realized fuel would be critical if he had to make a penetration at his destination, which seemed imminent, but he stated that he was committed and thus continued the flight.

Forty miles, or 6 minutes at cruise, from the destination another air force base was passed. This base also had jet facilities.

Reaching his destination radio facility the flight leader indicated 850 pounds fuel after being airborne 1 plus 59. The wingmen had exchanged fuel states and the number four man reported 700 pounds though this information apparently did not come to the attention of the flight leader.

A penetration was made but instead of breaking out below the overcast as expected, the flight leader reported he first saw the ground when at 2000 feet and with only about a mile of forward visibility.

Using the time furnished by the communication station as a reference, 11 minutes was consumed from the time the flight leader reported the high cone until he passed the low cone. UHF/DF facilities were not available and the jets flew a heading from the range station to the field.

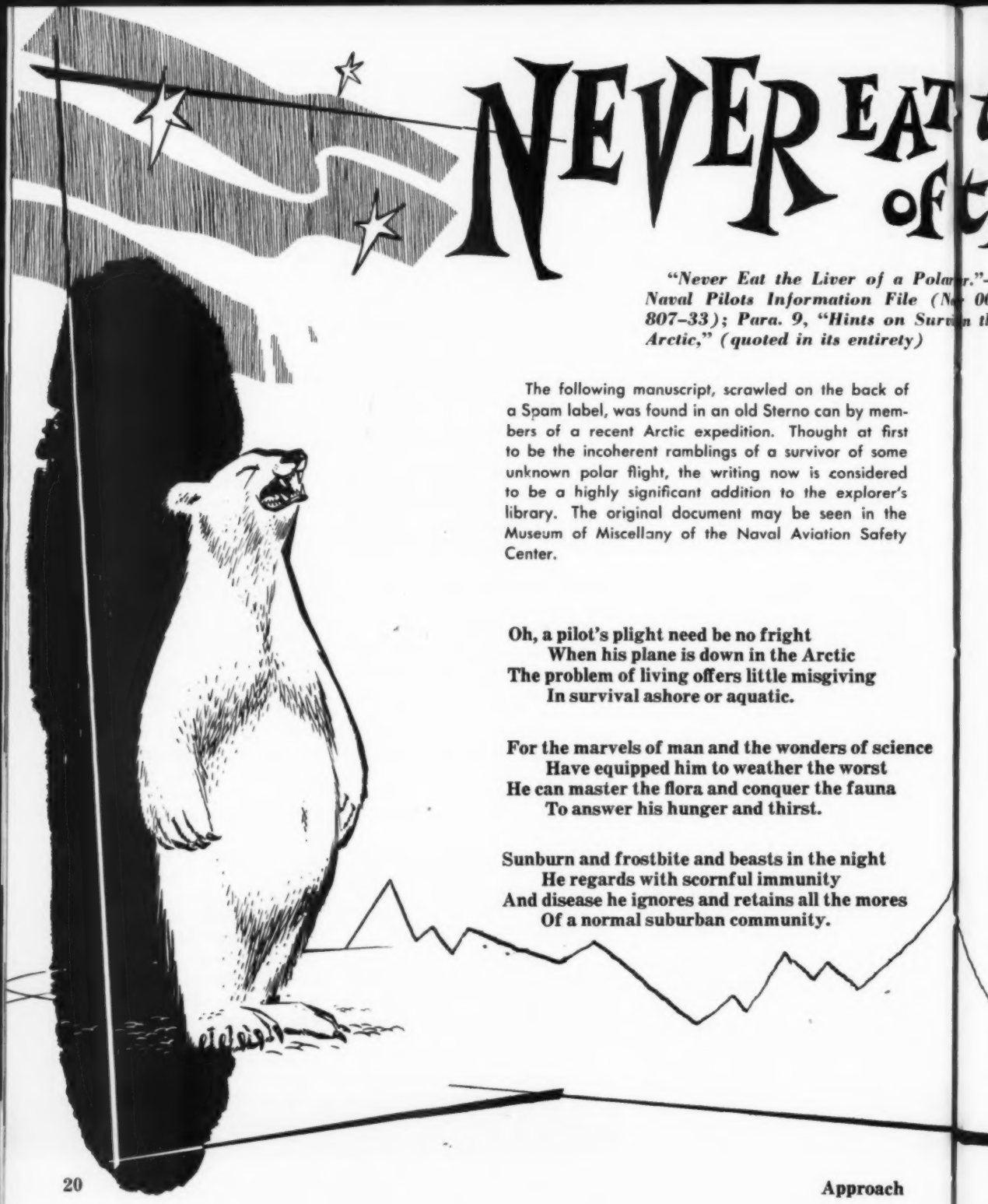
The flight leader, his wingman and the section leader landed. While taxiing in, the tower asked where the fourth plane was. Due to the low visibility resulting from the smoke and very light rain his absence had not been noted by the other members of the flight.

With the field in sight the number four pilot had experienced a sensation of losing power. With full throttle he continued to lose altitude and so rolled his wings level, seeing a row of trees ahead of him. "I lifted my nose to clear the trees," he said, "and that is all I remember except for flying debris during the crash."

From the amount of fuel put into the aircraft which landed safely the following amounts of fuel in pounds remained in the aircraft at shutdown: Flight leader — 188 pounds, wingman — 253 pounds, the section leader— 338 pounds. About 18 gallons or 108 pounds were drained from the number four aircraft which had crashed.

The accident board indicated that the flight leader's estimate of 2 plus 30 fuel aboard was unrealistic. The Group commander stated that experience with the FJ-2 has shown that it cannot remain airborne for that time at cruise power.

One endorsement by higher authority amplified this thought and stated that, "No amount of pre-planning can take the place of sound judgment and a high regard for established procedures and directives when the plan begins to deteriorate." The squadron SOP called for 1000 pounds of fuel at the break, one of the prime purposes being to avoid just such accidents as this. This fact that this SOP was violated almost from the start, not only by the flight leader but also by the three other members of the flight who also accepted the flight plan, is significant.



NEVER EAT t of t

"Never Eat the Liver of a Polar r."- Naval Pilots Information File (N 0 807–33); Para. 9, "Hints on Surv n t Arctic," (quoted in its entirety)

The following manuscript, scrawled on the back of a Spam label, was found in an old Sterno can by members of a recent Arctic expedition. Thought at first to be the incoherent ramblings of a survivor of some unknown polar flight, the writing now is considered to be a highly significant addition to the explorer's library. The original document may be seen in the Museum of Miscellany of the Naval Aviation Safety Center.

Oh, a pilot's plight need be no fright
When his plane is down in the Arctic
The problem of living offers little misgiving
In survival ashore or aquatic.

For the marvels of man and the wonders of science
Have equipped him to weather the worst
He can master the flora and conquer the fauna
To answer his hunger and thirst.

Sunburn and frostbite and beasts in the night
He regards with scornful immunity
And disease he ignores and retains all the mores
Of a normal suburban community.

...AT the LIVER ...f the POLAR BEAR

Polar."—
e (No 00–
Surv n the
y)

There is, however, one law of existence
Which the survivor must note and beware
Though you're short on persistence and low on resistance
Never eat the liver of a polar bear!

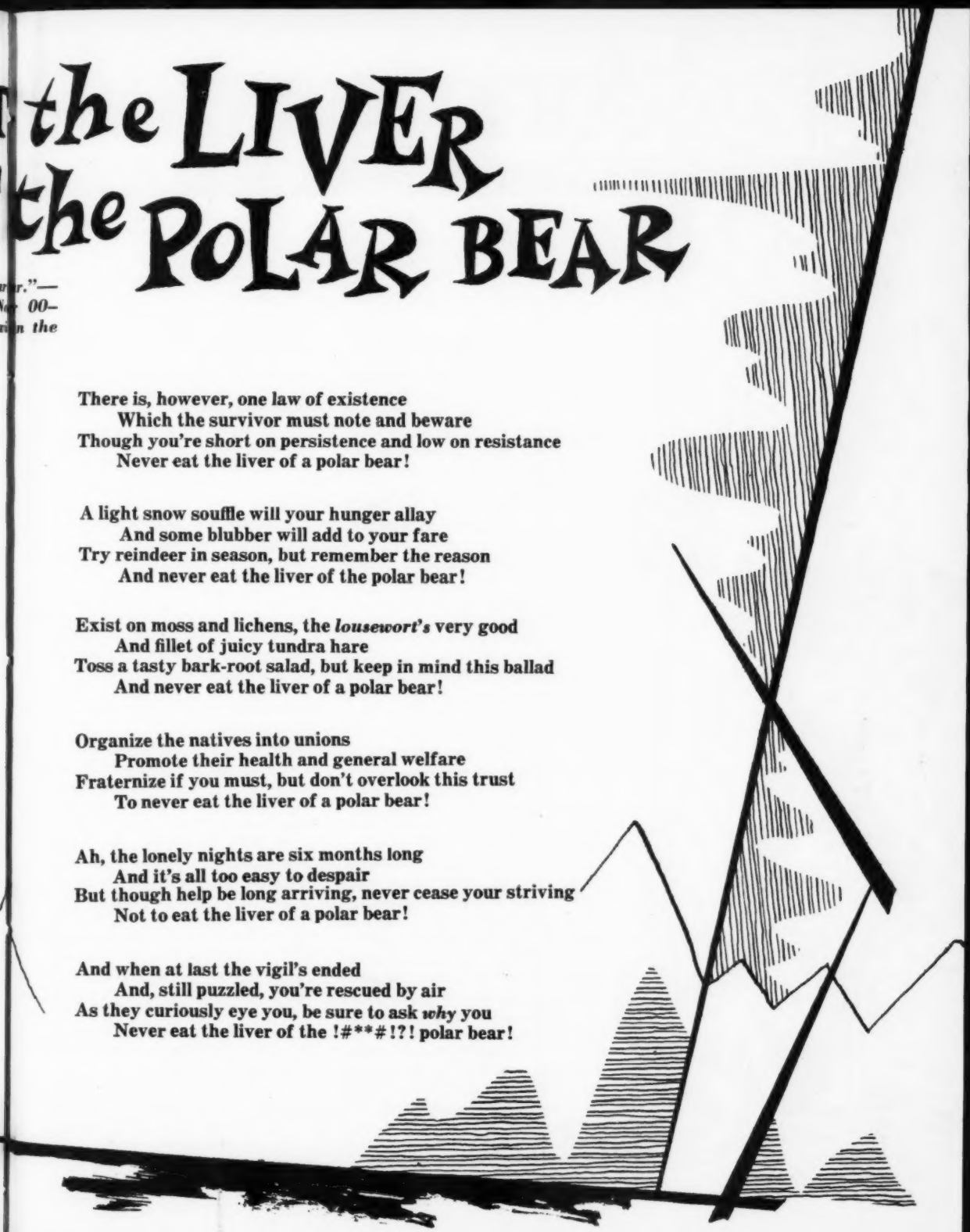
A light snow souffle will your hunger allay
And some blubber will add to your fare
Try reindeer in season, but remember the reason
And never eat the liver of the polar bear!

Exist on moss and lichens, the *lousewort's* very good
And fillet of juicy tundra hare
Toss a tasty bark-root salad, but keep in mind this ballad
And never eat the liver of a polar bear!

Organize the natives into unions
Promote their health and general welfare
Fraternize if you must, but don't overlook this trust
To never eat the liver of a polar bear!

Ah, the lonely nights are six months long
And it's all too easy to despair
But though help be long arriving, never cease your striving
Not to eat the liver of a polar bear!

And when at last the vigil's ended
And, still puzzled, you're rescued by air
As they curiously eye you, be sure to ask *why* you
Never eat the liver of the !#**#!?! polar bear!



ANYMOUSE and

HAPPY COLONEL

"Early this spring, I and another marine colonel of mature years were on a cross-country to Montreal in a SNB-5, especially selected for the time of year and the northern latitudes; that is to say, the *Beech* had full de-icer boots, prop alcohol, and all of the anti-icing systems were in working order.

"The flight to Montreal was uneventful, but for the return trip when we expected a rather severe cold front to pass through the area, with its orientation roughly along the route we intended to fly back to Anacostia. We were briefed by aerology over a loud speaker in the RCAF clearance room at Montreal. We did not get to look at a synoptic map, but the briefing was thorough and the aerologist apparently knew all the answers. He recommended that we cruise at 8000 feet because he considered there would be less turbulence at that level than at others within the *Beech's* capabilities in the cold front.

"All went well on the first leg which was direct from Montreal to Massena. As we neared Massena we could still see the ground, though the clouds below us were thickening slowly. We were a bit late at Massena and it appeared that the 50-knot forecast wind was actually somewhat greater. After we passed over Massena I refigured my ETA for Watertown and estimated it would take one hour to cover the 83 miles on V-29 airway between these two points.

"About this time the clouds, which had been steadily building up from below, finally reached the *Beech* and enveloped it. We had doused the propellers thoroughly just before entering the soup and had, of course, turned on pitot heat and adjusted the carburetor temperatures to about plus 10 degrees. All went normally for a while—ice built up on the leading edges of the wings and when it protruded about three inches, I would turn on the boots and all the ice broke neatly off and disappeared. This was repeated three or four times during the ensuing hour and each time the ice would break off cleanly except for a fan-shaped sheet about one foot in diameter which slowly grew forward from each wing tip running light.

"An hour went by and Watertown had still not showed up. I had to go through the embarrassing procedure of calling Watertown three or four times and filing a new ETA at five minutes later each time. It was soon apparent that we had quite a brisk headwind, indeed. When an hour and 25 minutes had gone by and we still hadn't covered the 83 miles from Massena, I finally gave up trying to estimate the time over Watertown and explained the situation to the controller at Watertown radio, who agreed that there was nothing to be done under the circumstances but to await arrival.

"About this time, the *Beech* started to labor. Even though the ice apparently broke off from the wings cleanly, it was building up on unseen portions of the airplane.

his hairy tales

Anymouse reports are submitted by Naval and Marine Corps aviation personnel who have had hairy or unsafe flight experiences. As the name indicates these reports need not be signed. The purpose of Anymouse Reports is to help prevent or overcome dangerous situations. Forms for writing Anymouse Reports are available in ready rooms and line shacks. All reports are considered for appropriate action. Send reports to the Naval Aviation Safety Center, NAS, Norfolk 11, Va.

The prop alcohol was almost gone by this time, the head temperatures were rising, and even though both engines were at full bore, we slowly commenced losing altitude. I reported this to Watertown and requested 4000 feet. Watertown consulted ATC and came back with the cheerful information that no lower altitude could be approved.

"As we passed 7500 feet, with the rate of descent increasing, we again called Watertown and informed him that, traffic notwithstanding, we were unable to fly any more at 8000 and, therefore, had to descend. I said that we would leave the airway and descend off airway to the west where I hoped we would cause no other aircraft difficulty. Watertown grumbled a little but did not object, and shortly after passing 4000 feet, we broke out under most of the weather and in a few minutes all traces of ice on the aircraft had evaporated. We landed at Watertown without further incident for a look at the weather map and an examination of the plane. There was no trace of ice on the aircraft except for the lower antennas for the ARC-5 and ARN-7 receivers, and these presented a curious appearance. Strung along each of them was a gigantic string of pearls, each pearl being a solid globe of ice about five inches in diameter. The two upper antennas for the ARC-5 transmitter had been carried away, presumably the result of the same phenomena, and only two short frayed ends remained.

"We secured all loose ends, flew VFR to Griffiss Air Force Base for fuel and made it back to Anacostia VFR, under the weather, without further incident.

"I do not know on what part of the plane all the ice was that weighted us down and forced our descent, but we were fortunate that the terrain near Watertown allowed us to break clear. The *Beech* flew for over an hour in the ice before being forced down and it appears likely, therefore, that this particular cold front could have been penetrated at right angles in the *Beech* under these conditions. Unfortunately, our destination required us to fly parallel to the front.

"Our experience was not particularly hairy but it was very illuminating. It is now perfectly clear to me that the old SNB, even with all de-icing and anti-icing aids installed and operating properly, under certain de-icing conditions simply will refuse to fly any more. In the future I shall apply this information judiciously and thereby help prolong what has so far been an interesting and profitable life."

HAPPY NIGHTMARE

In mid-winter Anymouse was copilot in an SNB which was on a night cross-country. "We were returning to our home field at Denver," said Anymouse, "and departed Tucson in clear weather."

"Route was via Phoenix up to Green 4 then to Albuquerque, Amber 3 to Denver. The weather section had told us of some IFR weather between Tucson and Albuquerque with light icing a possibility.

"A little south of Phoenix we entered the clouds. It was smooth until about 10 minutes north of Phoenix and light frost was forming on the wings. Icing equipment had been checked and was in readiness.

"When we hit turbulence, ice immediately began to form. Realizing we were in trouble, a 180 was made with the hope that the 10-minute separation was in effect.

"The turn was approved by ATC, but we could not hold altitude in spite of the boots and takeoff power. Airspeed went down to 90-95 knots and finally we were at the minimum en route altitude of 10,000 feet.

"ATC had advised there was traffic at this altitude so we turned on all lights with the very small hope that we would be seen in time to avoid collision.

"There was quite a headwind back to Phoenix and it took us about 20 minutes to return. Getting clearance to Tucson at 9000 we were able to hold altitude and finally broke clear.

"Before descending VFR in the clear we were able to see the load we had acquired. The boots had done their job but ice was sticking out at least 7 inches on the passing light; it was piled up about 4 inches on top of the wingtips and was sticking out at least that far on the wingtip leading edges. The inboard section of the wings showed about 5 inches of rough and jagged ice on the leading edge. We could only imagine what the antenna and other similar places were carrying.

"This Anymouse can only advise that if any icing is forecast don't go in an SNB. There isn't enough power to carry the ice even if the equipment works. This is especially true at the higher altitudes and in the high country."

HEADMOUSE

The receipt of numerous letters concerning certain items of personal aviation equipment prompts a departure this month from the usual policy of publishing varied "Letters" in order to present several representative comments on this controversial subject. The importance of the subject warrants considered, authoritative discussion of the many questions posed—from *all* viewpoints. Therefore, *Approach* intends to offer—from the "horse's mouth—in the November issue, if possible, the latest information available on safety and survival equipment.

Dear Headmouse:

Well, you people finally fizzled out for my money. For a long while now I have always been the guy who couldn't wait to get my hot grimy paws on your "mag"; in fact I even read *Approach* before *PlayBoy*. Nothing but the hot poop—no wise cracks—no sneering words about "stoopid" aviators. That impressed me—a good straight honest approach with valuable info. But now you've done it. In your June '56 issue you had to louse up with the article "Dressed to Kill." Just couldn't resist being the all-seeing eye and take a swipe at ye olde hot pilot. Okay wise guys—here's my rebuttal, take it for what it's worth.

Let's start with:

Helmet and work down. Sure we paint 'em bright flashy colors—ever hear of esprit de corps—we're proud of our outfit and want people to know it. Remember people, teamwork is what pays off—always. Now don't go giving me any gobbledygook about the original yellow being more easily seen from the air. That's just so much jet blast, buddy, cause I checked and that paint is no more special than any other.

Goggles: D - - - right, we ordinarily don't wear 'em for good reason, too! They restrict peripheral vision and at 500 knots that's something I want badly. I'm one of those guys that wears sun glasses—cause I *can see better*—not look sharper. I'm perfectly aware of the risk of glass in your eyeballs—it's just another chance aviators take every day.

Oxygen Mask: Same style as those of 1943 vintage — just fits a different system and believe me pal, we keep 'em clean. They're awkward, uncomfortable, and 10 years obsolete—but they're *all we got!*

Mae West: The traveling hardware store — carry more than a garbage scow — also vintage of 1940 era.

Leather Jacket: The Navy spent millions devising heating and refrigeration units for jets—then you give the guy hell cause he doesn't wear it—ever hear of heat prostration?

Gloves: Now you've really got my steam up!! I notice in a recent Aviation Supply Bulletin that these items were on the critical list. Ever think that maybe ole Wil Riskit *couldn't get a new pair???*

G-Suit: Same as gloves, pal—same as gloves, on the critical list.

Shoes: It wasn't until one year ago that these were issued; you previously had to buy your own.

What I'M getting at is this; how about getting your heads out and instead of equipping aviators in ancient, obsolete gear, get hot and develop something new and up-to-date—and then manufacture enough so that the stuff is not critical in 6 months. In closing I would like to say—notice the next naval aviator who passes through operations in his grubby, baggy, worn, dirty, cotton unflammable (hah) flight suit and think what our friends in the Air Force think of the neat-appearing Navy.

—Anymouse

Re: Hardhats

Dear Headmouse:

With the advent of the H-5 helmet, I suppose that all the desk-jockeys and four-hour-a-month boys will have to get one to put on display on their hat racks before the working-class can lay their meat hooks on one.

Wouldn't it be nice if someone in authority would direct first-issue to those engaged in "primary-billet" jet operations, since their (our) chances of having an accident are perhaps 1000 times greater.

Anymouse

Re: AF Visors

Dear Headmouse:

Being a flight safety officer, I should not condone the disregard of a directive designed to protect pilots from bodily harm; however, that must be my stand against current regulations governing the wearing of U.S. Air Force visors on Navy hardhats.

Headmouse in the April *Approach* has elaborately described the protective qualities of the H–3 and H–4 helmets after the accident, but has briefly glossed over a point which deserves much more consideration, that of vision for *accident prevention.*

Admittedly, there are a number of aviators who owe their eyesight to the protection for Navy goggles but on the other side of the ledger, how many have paid with their lives in a mid-air collision or faulty approach due to restricted vision? The records on this point may

be sparse due to the absence of the principals.

Anyone who has worn the hardhat oxygen mask rubber goggles-combination in high performance aircraft will grimly expound on the tunnel vision effect. Furthermore, the difficulty of maintaining an instrument scan over the nose piece is an invitation to vertigo.

From my personal observations and inquiries the Navy goggles merely adorn the helmet as an unused appendage, that is if they are worn at all. This brings us to three conditions.

1. Wear Navy goggles and accept the definite hazards of restricted vision.

2. Wear an Air Force visor (if you can get one) and accept the possible hazard of a head injury in case of an accident.

3. Wear no goggles and accept the chance of being blinded by foreign objects or *sunlight*.

In condition (1) the hazard is constant as long as the goggles are in place. In condition (2) the hazard is present only in case of an accident. I cannot accept condition (3) since my eyes are too sensitive to bright sunlight and the chance of collision is multiplied.

Choose what you may, I believe each pilot deserves that choice until such time as the Navy provides a helmet and face plate allowing unrestricted vision and adequate protection.

Anymouse

Dear Headmouse:

. . . This Mouse concurs with your basic thinking; however, what was good enough for Grandpa Pettibone in his flying days is [not] good enough for today's jet pilots. I agree that the old plastic rubber-mounted goggles saved many a pilots eyes in the past; but this goggle was designed and worked beautifully with good peripheral vision on the old cloth helmets. It was not intended to be used with hardhats. . . . As yet pilots do not have a suitable goggle to go with them. The present goggles reduce peripheral vision to a critical degree plus they fit so poorly around the oxygen mask that dirt can very easily get to the pilots eyes. Many pilots refuse to wear them and either go without any sun shield whatsoever or use sun glasses. Let's face it—the present arrangement is *very poor*. Instead of making excuses . . . . let's *get hot* and equip the present day jet-jockey with a suitable helmet and eye shield.

Anymouse

Re: Oxygen Masks

Dear Headmouse:

"I wear a medium oxygen mask and for several months have tried to get a much needed new one. Since a 'small' could be made to fit—uncomfortably—I finally took it. The problem seems to be Navy-wide, according to our supply officer.

"This doesn't apply just to masks. Our life jackets are real 'Caimanera Belles'—(overuse by just anybody without much loving care.)

"All we need to lose is one plane (and maybe one pilot) and there goes enough money to procure a lot of good personal equipment!"

Anymouse
Safety Officer

See next letter.—Headmouse

Dear Headmouse:

"About two weeks ago I wrote you concerning the non-availability of proper-sized oxygen masks. Another pilot and myself flew north in a tired F3D, intending to fly two newly overhauled F3Ds back to our squadron.

"I was in the radar observer's seat and between 30,000 and 35,000 feet, I thought the pressure was too low. I reached back to check the escape chute door, but as soon as I grabbed the handle the door blew open and our clothes bag went back into the tunnel.

"The cockpit depressurized with a bang and the pilot tells me that I said something about going into the escape chute to get the clothes bags. I unstrapped myself, took off my O_2 mask and swung into the chute before he could stop me.

"I recall getting a feeling that I was getting hypoxia in the worst way so I pulled myself up out of the escape chute. After that, I have no memory until I came to, kneeling backward in the R.O. seat."

The pilot had popped his dive-brakes and made a highspeed letdown until Anymouse began to stir. Then, he was able to get the mask from under Anymouse and up onto his face.

"We talked it over later and I realize that I had hypoxia before I started those fool antics. I would never have gone near the tunnel unless I had meant to bail out if I had known what was going on.

"Why did I get hypoxia? On this flight I must have failed to pull my mask tight enough (it was tight enough to hurt anyway) so it leaked without my realizing it.

"We have to have good, properly fitting, fairly comfortable oxygen masks to safely do the job required. Can't Headmouse —or somebody—do something about the procurement program on these items?"

The Same Anymouse
Safety Officer

Be sure to look for Headmouse's point-by-point discussion of these items in a forthcoming issue.—Ed.

In aircraft accident investigation, good answers require good questions. To improve your technique in obtaining information, read

HOW TO *Interview*

TO the AAR Board member and flight surgeon investigating an aircraft accident, one of the most important aspects and often one of the most difficult, is interviewing. This is an art which grows with experience; it requires a highly developed "chairside manner."

Sometimes the interviewer is faced with the distressing task of talking to the grieving relatives and friends of a deceased pilot and of doing this with consideration while still obtaining the information which may save another pilot.

Such a task may be facilitated by an understanding of some of the basic techniques of the art of interviewing.

The major factors in interviewing fall roughly into the two categories of technical and non-technical, or practical. But the technical considerations are inextricably bound up with the non-technical as in the song "Love and Marriage." "You can't have one without the other", so both categories shall be treated together.

Key factors to be considered are validity, reliability, purpose, and planning, along with the consideration of language used, use of pauses, and the knack of getting the subject to do the talking.

An interview is *valid* to the degree that the information gathered in the interview is a true account of the actual circumstances as they occurred, i.e., the occurrence about which the flight surgeon wishes to learn.

Validity will suffer seriously when the investigator is inept in his interviewing technique and elicits information that is not related to the real circumstances. Perhaps the best way to sum up validity is in the advice to "stick to the point." Area planning before the interview, as outlined below, is the best means available for evoking information that "sticks to the point" and thus maintains a high degree of validity.

The *reliability* of the interview is another primary factor that must be considered. An interview is *reliable* to the degree that the same information obtained on the first interview will be obtained on subsequent interviews. This appears a simple problem, but research and usage indicate that an unplanned interview has little better than chance reliability.

In non-technical language, this means that two accident investigators successively interviewing the same man will finish their interviews with differing basic information. This difference in basic data also will cause the interviewers to arrive at judgments that do not concur.

To make matters worse, the same interviewer will not

agree even with himself to a high degree as to the basic data on two successive interviews with the same man.

Purpose and Planning

The unplanned interview tends to be a spontaneous give and take between two people. The investigator usually enters the situation with only a hazy conception of how he is going to conduct it, and he sort of "feels his way along."

These are the interviews that are so unreliable. The low reliability of the unplanned interview may be raised substantially by systematic planning beforehand of the procedure and program to be employed.

Research indicates that the planning should be in terms of general areas rather than in terms of a prepared list of questions. The areas into which the interviewer should plan to direct his inquiry will be determined by the purpose of the interview.

Naturally the purpose of an interview with a deceased pilot's wife or friends will not be the same as an interview with a living pilot to determine whether he is fit to fly.

To illustrate what is meant by area planning, let's take as an example the case of an unmarried pilot who was killed in an accident that has been judged to have resulted from pilot error. The immediate person to be interviewed is the pilot's best friend and fellow flyer. The purpose of the interview is to uncover, if possible, any variables that may have caused or contributed to the accident.

In this case, the flight surgeon on the board, for example, would be interested in the overall area of the physiological and the psychological aspects.

The first step he would take in preparation for the interview would be to find out as much as possible about the accident and the pilot. *This is done before the interview.* Use of pre-interview information will enable any investigator, the flight surgeon in this instance, to manage better the interview time by eliminating

Please turn page

HOW TO INTERVIEW

Continued

the collection of known data.

The professional training of the flight surgeon will have already familiarized him with the variables to look for that may have contributed to the pilot involving himself in a fatal accident. It is these possible contributing variables around which the areas to be investigated are designed.

Area planning is utilized rather than a list of specific questions, for a question list is too stilted, tends to become too long and cumbersome, and may be too rigid; also, when a list of questions is asked, the tendency on the part of the person being interviewed is to answer "yes" or "no" to the questions asked and volunteer little or no information. In place of a list of questions, such as:

"Was the pilot taking aspirin?" "Did the pilot take sleeping tablets?" and so forth, plan to investigate the area of "medication." Asking "Was the pilot taking any medication, prescribed or otherwise?" will often eliminate an entire area at once and what was taken will be pinned down immediately.

Examples of systematic planning in the psychological field would be such areas as home environment (sick children, marital difficulties, financial troubles, in-laws . . .) working environment (relations with colleagues, etc.) and personality (emotional reactions, mood, tempers. . .)

An additional advantage of area planning is that it facilitates sticking to the business at hand and prevents getting into discussions of irrelevant subjects, such as the model of car driven by the interviewee, his father's political affiliation, college attended. . . .

Keep Him Talking

Nearly all authorities agree that the interviewer should do as little of the talking as he can get by with and have the interviewee do the bulk of the talking. After all—the information is deposited in the interviewee, not the interviewer. As interviewing is an art, not a science, it takes experience to keep the interviewee talking.

In many cases, the interviewee is anxious to talk. In these cases, the investigator's task is to direct the conversation into the proper areas. The experienced interviewer knows that one of the most effective devices for getting the person to continue talking without a direct question from the interviewer is the pause.

The Pause

The pause is an especially good technique for eliciting significant information when employed following an assertion by the interviewee. Considerable research has been done on the use of pauses, and it has been found that pauses as long as 10 seconds to 40 seconds may be used.

Often, in interviews in which the person being interviewed can be kept talking, the interviewer can get the most of the information he desires to fill in his areas without having to ask direct questions. The fewer the questions, the less the interview seems like an inquisition.

A most important consideration in interviewing is the interpretation to be put upon what the interviewer states.

One must be alert for what is implied. This is especially true in the psychological areas where one must often look behind the intellectual contents of the words for the emotional content. The fact that an accident pilot states "My wife dented a fender on the way to work this morning" is of no immediate concern but the fact that the pilot was obviously infuriated by the fender-denting is of paramount importance.

Taking Notes

It is agreed generally that taking records during the interviewing interferes with rapport and seriously limits the flow of information. It also adds to the length of the interview.

On the other hand, what is said during the interview is subject to rapid forgetting.

The approved procedure is to take as few notes as necessary during the interview, filling in the planned areas immediately following the interview. The use of areas will greatly facilitate recall of what was said in the interview.

It is beneficial for the interviewer to keep in the forefront of his thinking that the ultimate purpose of any interview is prediction. The data elicited at each individual interview is collected at a central point and examined as a unit. During this examination that information which indicates that it may be used to predict future behavior is separated from that which does not. A knowledge of this predictive data greatly aids the individual interviewer to plan his areas and evaluate his data in the light of that previously gathered.

Remember, you cannot aid a dead pilot, but your information may keep a live one in that state. ●

Medical Committee No Report

The words "No Report," appearing after "Medical Committee:," are found rather frequently in the Informal Quarterly Reports of Aviation Safety Councils.

A random survey of 25 Safety Council Reports recently received in the Office of the Chief of Naval Operations shows that 11 out of 25 contained the notation "Medical Committee: No Report."

By way of contrast, the Committees concerned with Pilot-Caused Accidents, Maintenance and Material Safety, and Air Operations invariably submit reports of problems and preventive action taken in their areas.

It is appreciated that local conditions will influence active participation in the Councils by the medical members. In the above survey, two Councils gave no indication of even having a Medical Committee. On the other hand, some Medical Committees appear not only to take a routinely active part, but also to assume a role of leadership in their Safety Councils.

Following is a list of topics presented by the 14 Medical Committees which did make reports to their Councils:

Effects of Obesity on High Altitude Flying

Care of the A13A Mask

Sampling by Psychologist of Two Air Groups Regarding Attitudes Toward Flying

Fatigue

Medical Subject Headings Prepared by Flight Surgeons in Relation to Overall Training and Safety Program

Releasing Canopies by Crash Crew

Injuries to Crash Crew

Hypoxia

Carbon Monoxide Poisoning

Ejection Seat Use

Hazards of Landing the F7U

Hard Hats for Helicopter Pilots

New Model Oxygen Regulator (Type 2867-B1)

Modifications of H-4 Helmet

First Aid Kits

Unreported Unusual Physical Reactions in Flight Personnel

Necessity of Recording Psychological Maladjustments

Duties of Flight Surgeons

Some of those titles sound like they would make good material for Approach. *How about writing them up and sending them to the Naval Aviation Safety Center, NAS, Norfolk 11, Va., Attn: Aero-Medical Dept?—Ed.*

HYPOXIA

a report

A jet pilot flying an F7U reported that he had *passed out* at 45,000 feet, regained consciousness and returned to base!

He stated that before losing consciousness, he was tense, lightheaded, and had a slight headache which he attributed to a tight helmet. These symptoms remained until he landed 15 minutes later, even though he had switched to emergency oxygen when he recovered from his one-minute period of unconsciousness.

Back in the squadron ready-room, it was determined that everything on this flight was similar to other flights in this same aircraft except the cockpit heat, which was full ON in an attempt to clear the windshield of heavy ice. This use of cockpit heat suggested a possible source of carbon monoxide.

What caused this loss of consciousness? Some of the possibilities considered were:

(1) carbon monoxide from the engine or the heating system, (2) hypoxia as a result of a faulty oxygen regulator, a faulty or poorly fitting mask, contaminated oxygen or a lowered hypoxia tolerance, or (3) hyperventilation caused by anxiety reaction due to the excessive icing. The problem was to isolate and correct the cause. and the flight surgeon was called on to assist in the investigation.

Two-and-a-half hours after landing, the flight surgeon interviewed the pilot and took a blood sample which was forwarded to Bethesda in accordance with BuMed Instruction 6510.4A. The pilot was feeling all right again when interviewed.

The squadron personnel suspected carbon monoxide.

The symptoms appeared to the flight surgeon to be due primarily to hypoxia.

The results of the blood carbon monoxide determination reported by the Naval Medical Center, Bethesda, indicated positive presence of carboxyhemoglobin, but in quantities insufficient to produce the symptoms as reported by the pilot. Thus the search was narrowed down to hypoxia or hyperventilation.

Because of the flight surgeon's knowledge of the pilot's stability and experience, hyperventilation was considered as only a remote possibility. The investigation was now channeled to the third possibility: hypoxia.

The oxygen regulator was changed in the aircraft, and the oxygen system has worked satisfactorily since that time; so it was assumed the trouble was found, corrected and the investigation was closed.

As an epilogue, remember proof is preferable to assumption. Facilities are available so tests can be applied to every component of the oxygen system, as they were to the pilot. The regulator can be tested by any O&R, NAS, FASRon, or similar unit having an oxygen regulator test stand and competent personnel to operate it.

If a regulator is found faulty, include information relative to the date of the last bench test and reported discrepancies since that date in your report of the incident. In this way, it is possible for interested agencies such as the Naval Aviation Safety Center, Bureau of Aeronautics and the Aircrew Equipment Laboratory to determine patterns or trends of failures and initiate corrective action.

If the regulator is not at fault, suspect the pilot's mask and its components.

Aviation Clothing and Survival Equipment Bulletins 7-54, 16-54, 27-54, 42-54 and 8-55 outline the procedures for testing and inspecting oxygen systems and masks. A leak in the exhalation valve which will allow ambient air to enter the mask during inhalation can be as fatal as a defective regulator.

Finally, the fit of the mask must be good. Hypoxia cannot occur if the pilot is receiving sufficient oxygen!

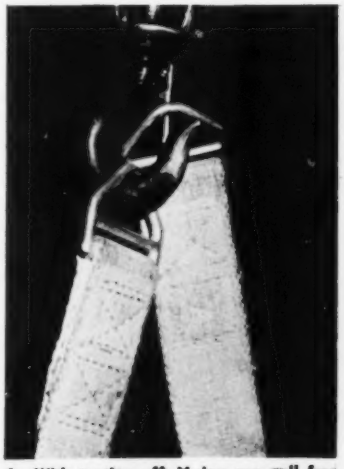
Notes from your Flight Surgeon

SLINGER STINGER

A passenger was to be lowered by sling from a HUP, but before the hatch was opened he stood up. The weight on the lowering sling was relieved and allowed one V-ring to move to the top of the hook (see photo A). With the V-ring wedged between the tip of the hook and the keeper the full weight of the passenger pulled the V-ring free.

Any passenger transfer then becomes a free-fall situation.

The fix is simple. Once in the sling with the V-rings centered in the hook, keep the weight on the sling during the entire period of time prior to lowering (see photo B). That way the rings will not move out of position on the hook.



A. With tension off, V-ring can pull free

B. Tension on, V-rings position correctly

TOO SCARED TO BE RESCUED

"I was aircrewman in an AD-5W, which crashed on CV take-off. After we hit, I unfastened my safety belt, stood up and inflated my life jacket. At this time it did not occur to me to get the raft out. I think I had always reasoned that I wouldn't need it that close to the ship. It seemed only about 30 seconds after I inflated the life jacket that the angel hovered over and threw down the cable.

"In panic, I could not think clearly and because of my fear of water, I did not put the loop around me properly but put one arm through it, then clamped with the other. Upon being pulled up to the helicopter, I had no hands to help myself with and was hanging too low for the crewman to pull me in. I was then lowered back down to get in it right which lost valuable time.

Pre-planning, practice, and preparedness prevent panic.

CO IN T-28

Opening the canopy of the T-28 slightly permits carbon monoxide to enter the cockpit! There have been instances where the canopy slid open slightly in flight. This is easily noticed because of the increase in noise level, and pilots should be cautioned to reclose it tightly and to keep it closed.

'...NO MOVIES TONIGHT'

A Marlin on patrol north of the Philippines had lost an engine. An emergency landing was made on the water in the mouth of the Calgayan River off Aparri, on the north coast of Luzon.

The decision was made to send "*Sally*" after the *Marlin*, a P5M-1. *Sally*, the affectionate name for the USS SALISBURY SOUND (AV-13), was in Keelung, Tiawan, 450 miles away.

Steaming down through the Luzon Straits, *Sally* made her preparations: the inboard aircraft refueling boat (ARB) was moved forward and shored up on the seaplane deck to provide more working room aft, strongbacks were rigged on the crane, towing gear broken out, spare engine readied, and all preparations made for a "quick snatch." However, the snatch turned out to be more rigorous than quick....

Continued next page

NO MOVIES TONIGHT
Continued

As pictured here, the handling of a seaplane by Sally is usually a routine matter. But such was not the case in this story.

The coast of Luzon off Aparri affords little protection for the delicate task of hoisting a P5M and the nearest sheltered harbor was some 30 miles of open sea to the northeast. Taxiing or towing the seaplane there would mean bucking 20-27 knots of headwind and 5-foot swells.

Before arrival much thought was given to anchorage of the *Sally* off Aparri. It was theorized that the strong current of the Calgayan River would dampen the swells rolling in from seaward and therefore the ship, anchored in the river current, would ride on a heading between the wind and the current. This would have the added advantage of creating a slight lee on the quarter of the tender.

When *Sally* arrived on the scene at 1600, the coast appeared even more forbidding than anticipated. A long white beach was almost hidden by heavy pounding breakers. An hour and 45 minutes of remaining daylight, a forecast of worsening weather, and the prior sortie of the *Marlin* on one engine from the river entrance left no time to investigate alternate possibilities.

Immediately upon anchoring, two 35-foot ARBs were put over and dispatched to take the plane in tow. The plane cut its engine and received the ARBs alongside. A ship's officer took station atop the P5M to direct the towing. Both ARBs experienced difficulty in adjusting their tow lines to cope with the sea conditions, inasmuch as the fittings in these plywood boats can give way if much strain is applied. Time expended in adjusting the towing gear proved costly and, in hindsight, the *Sally* commented that this could have been saved by initial use of a seapainter tow line from the stern of the tender with the boats used as holdbacks.

Meanwhile, the ship, anchored in 8 fathoms of water with 45 fathoms of chain to the port anchor, was held as in a vise by the river current and wind. Her head was some 60 degrees out of the wind, considerably more than had been expected. This resulted in a heavy roll combined with the pitch.

The ARBs towing the *Marlin* made an approach to the stern of the *Sally*. As the boat power was reduced nearing the ship, the *Marlin* weathercocked, shearing away beyond the reach of the crane. The same thing happened on the next approach, and the next. . . .

Darkness had fallen and a steady rain whipped across the scene, driven by wind now averaging some 30 knots with gusts to 37, swells averaged 6 to a maximum of 9 feet. Lights were rigged to continue the operation.

A third ARB ran a sea-painter to the *Marlin* and she was worked in and held under the *Sally's* counter by a combination of boats, lines and fending off poles. The relative roll and pitch of the ship and the plane kept bringing the plane's bow up within inches of the ship's fantail 40 mm. gun mount.

After many tries, the hook and hoisting sling were engaged and enough slack taken in to reduce the whip of the heavy weather

pendant and hook as the *Marlin* rose and fell under the counter. Immediately after hook-up, the stern of the ship rose, lifting the aircraft momentarily about four feet clear of the water. Before the ARB moored to the plane's starboard side could be cast off, the stern of the ship settled, and the gunwhale of the boat was caught under the chine of the plane's hull.

The stern rose on the next swell, which also rolled the ship to starboard about three degrees, and the plane again overrode the boat, and the radome of the plane was crushed against the counter of the ship. Down came the plane on the partially swamped ARB. This damaged the plane's hull, and sunk the boat. *Four men overboard!*

The coxwain of the second ARB immediately maneuvered his boat in under the plunging aircraft and snaked the four men out of the water, frogman fashion. Meanwhile, purchase was taken on the crane and the P5M lifted clear of the water.

Up on the bridge of *Sally*, the OOD was trying to swing the ship and head her into the sea to eliminate the roll. The starboard screw was turning ahead standard and the port screw was backing down full. *Sally* was riding in the troughs and rolling precariously with the "wounded" *Marlin* swinging pendulously off the starboard quarter. At this point, the admiral embarked in *Sally* gave permission to jettison the P5M and sink it by gunfire, but the *Sally* didn't want to give up yet. The anchor was heaved in and the ship got underway at three knots to head directly into the wind and swell.

This diminished the roll and the crisis was over. The plane was swung over the starboard edge of the floodlighted, rain- and wind-swept deck. Six steadying lines were attached and one side beaching mount was put in place. The six lines were being tended by 300 men (including 50 Army and Air Force passengers embarked in *Sally*), but even with all this manpower, each roll and pitch of the ship set the *Marlin* to swinging like a giant pendulum. *Sally* had a 5-degree list to starboard due to the off-center line suspension of a 58,000-pound airplane.

One roll bent the fittings of the sidewheel beaching gear, and it was necessary to break out a spare set of gear (which *Sally* fortunately had aboard, but was not required to). The port chine of the plane was damaged, but beaching gear was finally affixed and the *Marlin* was secured on deck.

It was still necessary to recover the two remaining ARBs. This was made more hazardous by the amount of water being shipped by the boats and it was decided to use the large crane rather than the boatfalls for pick-up. As the first of the ARBs was lifted, the free surface water in the boat rushed to the low side and the bowman was thrown overboard into the dark, foaming seas. Once again, the other ARB was able to effect a rescue. The second ARB was hoisted aboard empty after its crew came over the side by the Jacob's ladder.

Mission accomplished, *Sally* sailed off with the battered and lame *Marlin* on board. It is doubtful that any heavy seaplane has ever been successfully recovered under any worse conditions. It had taken 3 hours and 15 minutes, the last half of which was after dark. And 5 hours after the job was completed, the wind had built up to 60 knots.

There were no movies shown that night.

One week later, the *Marlin* was repaired, a new engine hung on her, and she had rejoined her squadron as an operational aircraft.

Thanks to Sally *for responding so aptly and frankly to our request for additional info on this very unusual incident. And a salute to the crew of* Sally *who can be justifiably proud of their performance.—Ed.*

It's one thing to haul a seaplane around in daylight in a calm sea—But at night, during a storm . . .

From the Ground Up

WINTERIZE FROM "A" TO "Z"—Whether you are a maintenance man, pilot or plane handler, it's a smart move to latch onto a copy of Technical Note 38–52 before winter sets in.

This 32-page booklet is replete with info covering aircraft maintenance from "Armament" to "Zyglo" both ashore and aboard; your personal comfort from helmet to vapor-barrier boot and flight from APU to BOQ.

It's a compilation of cold weather facts based on research by the Navy, Air Force, Canada, Great Britain and other countries who, "by virtue of their geographical location," were able to offer pertinent information. This research is continuing, so don't let the vintage of the T.N. lull you into thinking it's old cold dope—It'll steer you into the latest info, supplies and anything else you may need. With the help of this guidebook, the pilot's and/or maintenance handbook of your current airplane, you will be well up to date on the cold front. If you don't have enough copies within your outfit, have it ordered today from your nearest Aeronautical Publications Facility—the address listed in Publications Index, NavAer 00–500.

Some of the subjects covered by Tech Note 38–52 are:

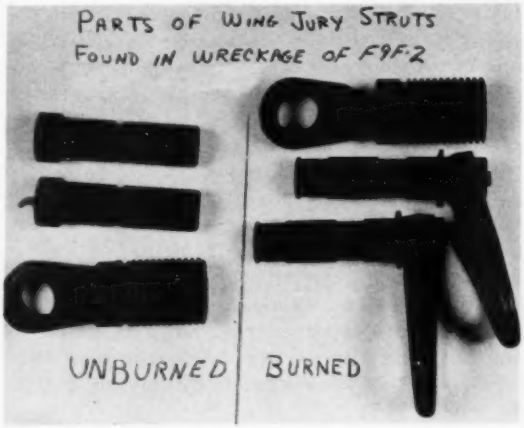
- Batteries
- Heaters
- Jet aircraft
- Turbo-jet
- Jato
- Icing and deicing
- Oil dilution
- Letdown and landing
- Helicopter
- Perspiration
- Lung frosting
- Forced landing
- Herman Nelson heaters
- Allowance lists
- Special equipment pools
- Special equipment
- Snow and ice removal
- Catapults and arresting gear
- AvGas system
- Fire-fighting system
- Aircraft handling ashore
- Preparations before deployment
- Power plants and accessories
- Aircraft structures ordance
- Photo equipment
- Oxygen equipment
- Instruments
- Auto pilots
- Armament
- Aircraft handling aboard carriers

LOOSE GEAR—With a student pilot at the controls, the F9F-2 was observed to roll to the right, out of a three-plane formation flying at 3000 feet. The plane entered a steep inverted dive from which it never recovered. The pilot did not eject.

Although the investigation could not determine the cause of the accident, it did reveal several dangerous practices that existed, and prompted immediate remedial action on the part of the command.

Parts of two wingfold jury struts were found in the impact area of the left wingfold. They apparently had been disassembled and thrust through the lightening holes of the wing. One of the shackles was left sticking into the aft side of the wing locking hole. This in itself was not sufficient to prevent the wing from locking when spread, but did cause some distortion of the locking mechanism.

Part of the jury strut had become lodged in



the aileron linkage and might have caused a loss of control. Two cases of frozen aileron trim tab were reported by pilots flying this aircraft during the previous three months, but maintenance personnel had oiled the gear box and worked the tab free.

There had also been 16 pilot-and-plane-captain-reported hydraulic leaks in the vicinity of the wing center section during the same three-month period. Many of these "gripes" were reported on preflight inspections as "hydraulic leak under belly" and had been written off by maintenance personnel as "OK."

The recommendations of the Accident Board, approved by subsequent endorsement and accepted by the command, were: (1) Maintenance personnel use extreme caution to prevent loose equipment from being left in an aircraft. Wing jury struts and other special equipment should have a three-foot red streamer attached in order to insure its removal upon completion of maintenance. (2) On the pilot's discrepancy form and maintenance work orders, it must be assumed that no corrective action was taken on discrepancies which are marked simply "OK." More specific information of corrective action taken must be noted.

WHEN MAKING CONTINUITY CHECKS—Don't wiggle and force the volt ohmmeter test probes into the female disconnect plug—you may spring the female pins and cause one of the hardest things to locate—a loose, sometimes off-on electrical connection. By forcing test probes into the female disconnect plug you can spread the female pins and cause endless electrical troubleshooting and the replacement of perfectly good component parts when the trouble is caused by a faulty disconnect plug. This ties up your electrical shop with needless squawks.

Here's a little trick that makes a dandy remedy for disconnect plug trouble—simple and foolproof—easy to make: Disassemble old male and female disconnect plug and make snug test probes by soldering a one-inch piece of No. 20, 18 or 16 wire to the female pin and crimp an "amp terminal" to the other end of the wire—make several testers—both male and female and keep 'em handy on your key ring along with your keys.— *NAA Service News.*

TAPING OUT WEATHER—A possible solution to the problem concerning corroding AN electrical connectors in TV aircraft is offered by one squadron which appears to have the situation well in hand. They say:

"Much interest was aroused due to the fact that this squadron has not experienced any case of corrosion as indicated by reference (a) . . . There have been a few cases of moisture in the microphone throttle switch and in connector F-25, all of which were discovered

Continued next page

FROM

THE

GROUND UP

Continued

This did not prove effective, especially in thunderstorm conditions, due to the wind blowing the covers off or damaging them. During the past year, at any time there was a possibility of precipitation, the canopy openings have been secured with masking tape.

This includes aircraft which have been flown to another station for RON. The pilot draws the tape prior to departure.

"Upon inspection of the connectors in accordance with ComAirLant message R1715-22Z, no cases of corrosion were found.

"It is felt that any effective means of sealing the canopy against moisture when aircraft are on the ground will greatly reduce and possibly eliminate this corrosion.

"The cost of masking tape is negligible, about 15 cents per aircraft, considering the savings effected in man hours and parts needed to correct the trouble which may occur."

"Upon discovery of this trouble all TV-2 aircraft assigned to this squadron were secured with cockpit covers in order to preclude the possibility of water entering the cockpit. on preflight inspections.

TV CANOPY FIRED ACCIDENTLY—The plane captain of a TV-2 tried unsuccessfully to install the safety pin in the M2A1 canopy remover. The canopy was, and remained in the open position. An ordnanceman was called upon to perform the task.

He noted the sear pin was partially out of the case and that the firing lever was almost in FIRE position. An attempt to return the lever to the SAFE position failed. An attempt to return the sear pin to the proper position likewise failed. While attempting to disengage the firing cable from the firing lever, the remover fired. The recoil force of the remover caused damage to the aileron torque tube, the canopy drive motor, the motor shaft, track assembly and canopy mechanism.

Investigation revealed that the sear pin safety wire (.020-in. diameter soft copper) was too loose, allowing the sear pin to withdraw from the SAFE position. It could not be determined whether or not the safety wire had been incorrectly installed (too much slack) or if the pin had been inadvertently withdrawn and thus caused the slack condition.

Prior to the previous flight, the plane captain had experienced difficulty withdrawing the safety pin. He attributed this to a bent pin. The subsequent events proved that the sear pin had been allowed to slip down a fraction of an inch and thus caused a partial closing of the safety pin hole.

It was recommended by the reporting activity that the sear pin safety wires (.020 in. dia. soft copper safety wire) on M2A1 systems be installed as snugly as possible and that any subsequent looseness be immediately investigated by a competent qualified ordnanceman; that competent qualified ordnancemen be used exclusively for the preflight and postflight inspections of the seat catapult and canopy remover systems.

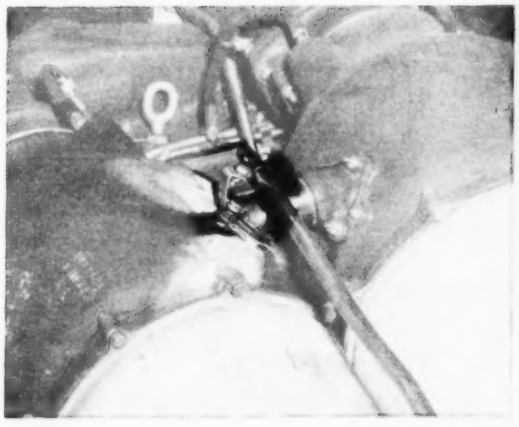
USE CORRECT OXYGEN SYSTEM ANTISEIZE, AND USE IT SPARINGLY—Specification MIL-T-5542 oxygen system antiseize compound must be used sparingly on the first two threads of male fittings only. Recent incidents, in which the pilot's judgment was impaired during flight, were investigated and showed that too much antiseize compound was used. This excessive use is believed to have caused hypoxia. As a particuliar instance, in one investigation excessive antiseize compound was found in the oxygen filler trailer.

Besides the importance of using oxygen system antiseize compound correctly, it is equally important that the correct antiseize compound be used.

The currently approved compound conforms to Specification MIL-T-5542B (ASG), which supersedes Spec. MIL-T-5542A. Compounds meeting the older specification may produce trichlorethylene fumes that can be toxic, when in sufficient concentration. Compounds meeting Spec. MIL-T-5542B (ASG) include: Retorseal 15, manufactured by Rector Seal Equipment Company; DAG 217, manufactured by Acheson Colloids Company; Compound 264, manufactured by Valley Products Company; and Key Abso-Lute, Type B, manufactured by the Key Company.— *NAA Service News.*

Murphy's Law*

* If an aircraft part can be installed incorrectly, someone will install it that way.



Above: Wrong—bracket installed under flange
Right: Right—bracket installed under bolt head

Lieutenant Larry W. Battle, aviation safety officer at NAS Columbus, reports an F9F "Murphy" via an Anymouse Form. Headmouse, knowing this Murphy may cause other F9F accidents, passes it along.

In this case, after the combustion chambers were removed on a check, the bracket which holds the thermocouple lead off the interconnector was installed incorrectly (Photo A). It wasn't until 60 hours later and after the check crew had used the emergency (shotgun) starter, and just prior to pulling the "jugs" again, that the inspector found magnesium deposits indicating leakage at the interconnector flange. The bracket had been secured between the flange of the interconnector and the combustion chamber mounting pad instead of between the head of the bolt and top of the interconnector flange (Photo B). Incidentally, this same inspector missed this Murphy on the 30-hour check preceding.

Reference is made to the Weekly Summary of Major Aircraft Accidents, 12-18 December 1955, and 7-13 May 1956 which reported four accidents resulting from burn-through of interconnectors.

Meanwhile, if you detect a Murphy situation, submit either a FUR report or an Anymouse report.—Ed.

TAKE THE "IF" OUT OF IFR

Instances of aircraft clearing VFR into known IFR weather conditions are a continuing subject of reports received by safety agencies. Generally the pilot will state that if he can't make it VFR, he will change his flight plan. Obviously this can lead to the pilot's attempting to maintain VFR down to the point where he is below minimum flight altitudes as specified in 3710.7 and CAR 60. This sort of thing can be particularly hazardous in mountainous terrain.

In short, don't fight it, file it!

LIGHTNING STRIKES

Two cases of lightning strikes in P2V aircraft were reported recently. (There are six incidents of lightning striking P2V aircraft on record at the Naval Aviation Safety Center.) In each of the six cases the trailing wire antenna was extended. In one case the empennage portion of the port tiptank was torn away. Fire developed in the remainder of the tank and it exploded on being jettisoned. No personnel injuries resulted.

There was uncertainty as to whether some of the aircraft were actually struck by lightning or had experienced severe discharges of static electricity from the aircraft. Nevertheless, the trailing wire antenna was burned off in every case, emphasing that the trailing wire antenna forms a good low impedance path between two sources of high electrical potential difference.

Thunderstorm activity was not evident in all incidents. Flight conditions included level flight in stratoform and cumuliform clouds, moderate turbulence and icing, penetrating snow showers and IFR climbout. In view of the foregoing, P2V activities should stress the importance of prudent use of trailing wire antenna.

SQUADRON COMMUNICATIONS TRAINING

Whidbey has prepared wire recordings of tower communications training. These recordings are designed to eliminate unnecessary and unauthorized transmissions and phrases in communicating with the tower.

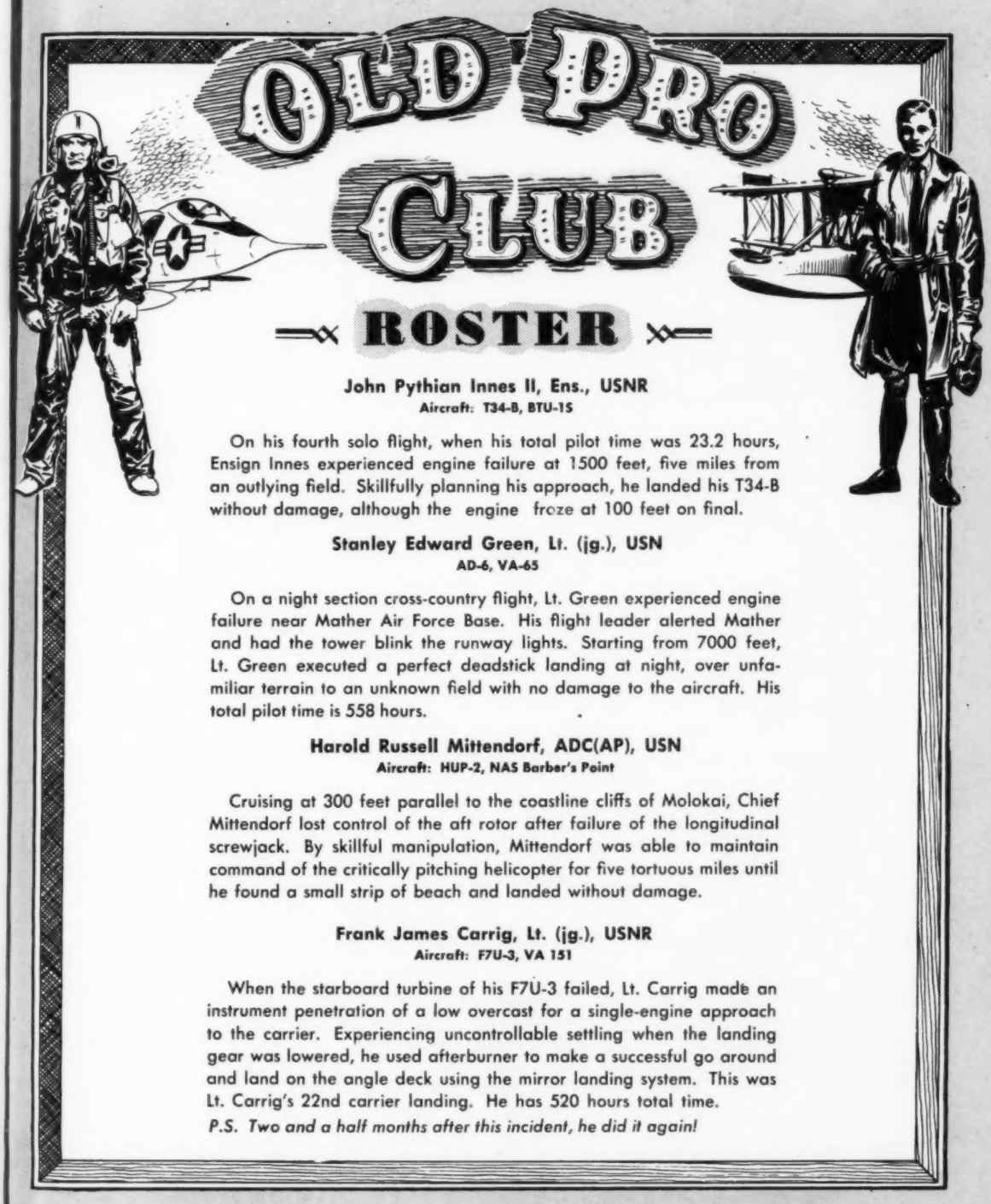
Recognition for Preventing Wheels-up Landings

Beginning next month, *Approach* will recognize those persons, who in the proper performance of their duties, prevent wheels-up landings. This will include tower operators, runway signalmen (wheels watches) or pilots of other aircraft observing a wheels-up approach.

Commands with knowledge of "saves" by their personnel are requested to submit a speedletter report of the incident to: Director, Naval Aviation Safety Center, Naval Air Station, Norfolk 11, Virginia.

Details of the save should include: name, rate, service number of the person responsible; duty assignment and/or location; type of aircraft; time of day; weather conditions if applicable; equipment available to the person; equipment used; previous saves, if any and a brief narrative of the incident and subsequent action. This information will permit composing a brief citation and issuing a suitable letter and "Wheel Watcher's Club" card.

Watch for it in next month's Approach . . and *watch out for wheels-up landings!*



ROSTER

John Pythian Innes II, Ens., USNR
Aircraft: T34-B, BTU-1S

On his fourth solo flight, when his total pilot time was 23.2 hours, Ensign Innes experienced engine failure at 1500 feet, five miles from an outlying field. Skillfully planning his approach, he landed his T34-B without damage, although the engine froze at 100 feet on final.

Stanley Edward Green, Lt. (jg.), USN
AD-6, VA-65

On a night section cross-country flight, Lt. Green experienced engine failure near Mather Air Force Base. His flight leader alerted Mather and had the tower blink the runway lights. Starting from 7000 feet, Lt. Green executed a perfect deadstick landing at night, over unfamiliar terrain to an unknown field with no damage to the aircraft. His total pilot time is 558 hours.

Harold Russell Mittendorf, ADC(AP), USN
Aircraft: HUP-2, NAS Barber's Point

Cruising at 300 feet parallel to the coastline cliffs of Molokai, Chief Mittendorf lost control of the aft rotor after failure of the longitudinal screwjack. By skillful manipulation, Mittendorf was able to maintain command of the critically pitching helicopter for five tortuous miles until he found a small strip of beach and landed without damage.

Frank James Carrig, Lt. (jg.), USNR
Aircraft: F7U-3, VA 151

When the starboard turbine of his F7U-3 failed, Lt. Carrig made an instrument penetration of a low overcast for a single-engine approach to the carrier. Experiencing uncontrollable settling when the landing gear was lowered, he used afterburner to make a successful go around and land on the angle deck using the mirror landing system. This was Lt. Carrig's 22nd carrier landing. He has 520 hours total time.

P.S. Two and a half months after this incident, he did it again!

Recognition of heads-up flying is essential to a positive program of flight safety. Each month, Approach will acknowledge certain selected individuals whose exhibited flying ability merits membership in the "Old Pro Club". Commanding officers are invited to submit nominations for selection.

why wait?

Know-how is the only answer in meeting Old Man Winter on even terms. Get the jump on him this year by cracking the books early.

Cold Weather Information Reference Sources

TECHNICAL NOTES

38-52 Instructions for Cold Weather Operations of Naval Aircraft (This is the best single-package on cold weather operations available—Ed.)
1-56 Ice and frost on exterior surfaces of aircraft; fluids for removal and prevention of
5-55 Turbo-jet engine icing
1-55 Rain repellent and anti-fogging compound for windshields and transparent closures
23-53 Ice and frost on exterior surfaces of aircraft; fluids for removal and prevention of
16-51 Instruments; oil pressure gauges, cold weather operation of
86-45 Operation and maintenance information on mooring airplanes for normal and extreme wind conditions
83-42 Operating and maintenance information on Herman Nelson aircraft engine and shelter heaters

TECHNICAL ORDERS

30-55 Use of carburetor heat
5-56 Anti-icing fluids for windshields, propellers and carburetors; use of

AVIATION CLOTHING AND SURVIVAL EQUIPMENT BULLETINS

40-54 Suit, anti-exposure, Mk 3 & 4; alternate methods of wearing
36A-54 Suits, flying, anti-exposure, Mk 4 & 3 (modified), instructions for fitting (additional).
36-54 Suit, flying, anti-exposure, Mk 4 & 3 (modified), instructions for fitting
35-54 Suits, flying, anti-exposure, Mk 4 & 3 (modified), instructions for wearing
31-54 Suit, flying, anti-exposure, continuous wearing, Mk 3

MISCELLANEOUS PUBLICATIONS

OpNav Instr. 3710.12 Ice formation on aircraft
NavDocks TP-Pw-29 Snow removal
NavAer 00-80T-56 Survival training guide
NavAer 00-80Q-1 Ice formation on aircraft
NavAer 00-80T-32 Polar guide
NavAer 00-80S-56 How to survive on land and sea
NavAer 00-75-510 *Approach*, the Naval Aviation Safety Review

Training Films:

FA 7923 How to use cold weather clothing
MA 2627 Land and live in the Arctic
3819 Personal health in snow and extreme cold
5377A Introduction to the Arctic
6659 Task Force Williwaw
6661 Exercise Musk Ox
6667 Task Force Frigid
6803 Exercise Yukon
6948 Survival on Arctic tundra
7450 General effects of cold on man
MB 5394 Exercise Eskimo
5395 Exercise Polar Bear
MC 6376 The secret land
MH 7491 Cold weather training, indoctrination and survival
9282 Cold weather uniforms
MN 2644 Cold weather operations of aircraft
6666 Canadian Arctic operation
6772 Cold weather operating problems
6912b Navy Sierra snow test
7419a Ships, men and ice
7458b Mark IV exposure suit
7478 Ski jump No. II
7818 Survival in the Aleutians